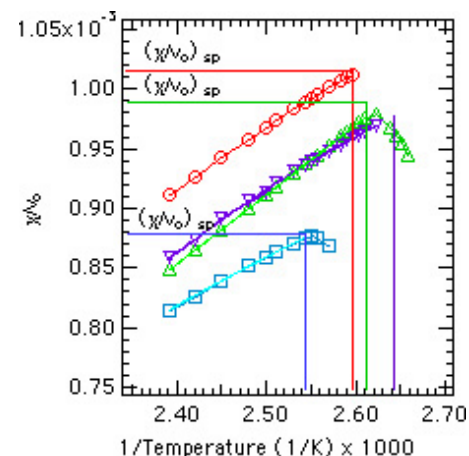
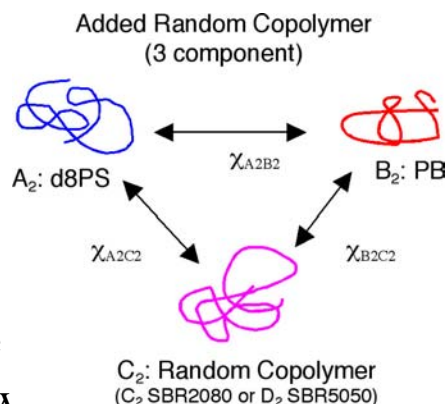


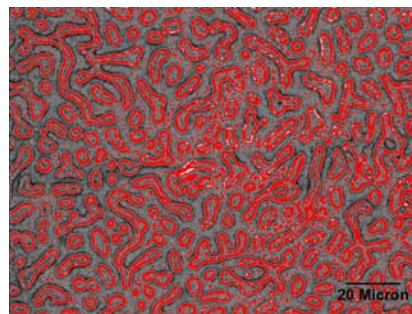
RUI: Blending Polymers: The Influence of Copolymer Additives on Phase Separation Behavior

Dean A. Waldow, Pacific Lutheran University, DMR-0314428

The blending of polymers has been long suggested to be a method to provide materials with new properties. These polymer blends often phase separate leading to poor performance. Copolymer additives have had some success in overcoming this problem. The goal of this research is to better understand how copolymer additives of different structure and composition can aid in compatibilization. A new insight into the effect the compatibilizer has on the blend has been obtained using small angle neutron scattering. The experiments give information about thermodynamics of these blends that allows better understanding of compatibilization versus the dynamics of phase separation. Other projects are focusing on light scattering and microscopy of blends and synthesis of copolymers.



Schematic of polymeric interactions and thermodynamic results from neutron scattering. *Journal of Polymer Sci., Polymer Physics*, in press (2004)



Microscopy data and student conducting synthetic research.

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Education: The past summer, four undergraduate students did summer research on various projects. The students are listed with their project and their post undergraduate (UG) goal or current location. Paul Clark (living synthesis of copolymers, graduate School), Kjersta Larson (graft and triblock studies, engineering at Columbia Un.), Allison Kanarr (dynamic light scattering, continuing UG student), and Jenifer Hoffert (optical microscopy, continuing UG student).

Outreach:

Each summer, undergraduate research students and the principal investigator have hosted a hands-on material science workshop for high school students from underrepresented groups in conjunction with the Washington State Mathematics, Engineering, and Science Achievement program. (www.washingtonmesa.com)

